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PROGRESS REPORT
FOR
MONTH OF AUGUST 1958



## BROADBAND ANTENNAS, FILTERS AND DETECTORS

Purpose: To determine the feasibility of developing a broadband system for the 50 mc to 40 kmc frequency range.

Personnel: Electrical Engineers: [redacted] 25X1

Status: The investigation of commercially available crystals and holders has continued. It was decided that the best procedure would be to evaluate the crystals and holders in conjunction with the amplifier that they will be used with. That is, to measure the tangential sensitivity of the entire system, less antenna. This evaluation was not performed in August because the amplifier and one or two of the crystal holders purchased for evaluation had not been received.

Simple high pass filters for the 10 - 40 kmc range have been investigated and show considerable promise. The scheme consists of a horn whose wave guide cuts off at a given frequency and dielectric slabs which are inserted in the wave guide to lower this cut off frequency. The amount the low frequency cut off changes is a function of the dielectric constant and dimensions of the slab. At this time it is thought that a single horn-waveguide-crystal assembly and two dielectric slabs will be adequate to cover the 10 - 40 kmc band roughly in the following bands. 32 - 40, 16 - 40 and 10 - 40.

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The low frequency cut off characteristics of the Logarithmically Periodic antennas considered for use below 10 kmc have been under investigation. It has not been determined to date whether this cut off is sharp enough to provide high-pass type filtering.

It is requested that the customer secure for us the following reports which we have been unable to gain access to.

AD 131 249 Page 879 '58-8

P. R. D. 15 June-58

"Techniques For Sensitivity Improvement or Crystal Video Receivers (Interim Report - Secret)

Future Plans: Work on the crystals, high, medium and low frequency antenna and filter schemes will continue. It is felt that some conclusions can be reached in the next period.